

Translation

PATENT COOPERATION TREATY

PCT/EP2003/006291



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 10228628/PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/006291	International filing date (day/month/year) 14 June 2003 (14.06.2003)	Priority date (day/month/year) 26 June 2002 (26.06.2002)
International Patent Classification (IPC) or national classification and IPC C08F 220/06, C02F 1/56, C14C 9/00		
Applicant STOCKHAUSEN GMBH		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>7</u> sheets, including this cover sheet. <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of <u>1</u> sheets.
3. This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input checked="" type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 23 October 2003 (23.10.2003)	Date of completion of this report 04 November 2004 (04.11.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

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International application No.

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I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
pages _____ 1-23 _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☒ the claims:
pages _____ 7-23 _____, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages _____ 1-6 _____, filed with the letter of _____ 03 October 2004 (03.10.2004)
- ☐ the drawings:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 1

because:

☐ the said international application, or the said claims Nos. _____
relate to the following subject matter which does not require an international preliminary examination (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 1
are so unclear that no meaningful opinion could be formed (*specify*):

See the supplemental box

☐ the claims, or said claims Nos. _____ are so inadequately supported
by the description that no meaningful opinion could be formed.

☐ no international search report has been established for said claims Nos. _____

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: III.1

**Non-establishment of opinion with regard to novelty,
inventive step and industrial applicability**

1. Claim 1 is not clear as regards component b3) ("... fatty alcohol ... and its esters and amides..."). Presumably "its esters and amides" has been left in the claim by mistake (see the applicant's letter of 3 October 2004). The following examination in Box V is therefore based on a claim 1 which contains only an unsaturated fatty alcohol containing 8 to 30 carbon atoms as component b3) (PCT Article 6).
2. Claim 1 (copolymer of) is inconsistent with claim 10, which additionally claims other monomers c) (copolymer containing) (PCT Article 6).
3. Claims 18 and 19 are not supported by the description (PCT Article 6).
4. Claim 1 (the unsaturated fatty alcohols) is not fully supported by the description (PCT Article 6).
5. The respective amounts of components a), b) and c) (pages 7 to 9) appear to be essential to a clear definition of the term "water-soluble" (PCT Article 6).
6. The description is not consistent with the current version of the claims.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-23	YES
	Claims		NO
Inventive step (IS)	Claims	1-23	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-23	YES
	Claims		NO

2. Citations and explanations

Novelty:

1. EP-A-1 209 198, example 17, discloses copolymers showing good solubility in water which are produced by radical copolymerization, in an organic solvent, of acrylic acid (a) with a compound (b), which contains at least two ethylenically unsaturated double bonds (pentaerythritol tetraallyl ether), and a compound (c), an ester obtainable by reacting an unsaturated fatty acid with a polyol (decaglyceryl monooleate). The copolymers are used as thickeners for aqueous systems.

The copolymers as per claim 1 differ from the copolymers of EP-A-1 209 198 in that they contain an unsaturated fatty alcohol as component (b) and in that they are formed by radical polymerization in aqueous phase.
2. SU-A-1 435 580 (Chemical Abstracts, see the international search report) describes the copolymerization of methacrylic acid with terpenes in aqueous solution in the presence of sulphuric acid. The aim is to increase the product yield and to reduce the reaction time.

The described method does not involve radical copolymerization.

3. EP-A-0 219 043 discloses aqueous dispersions of copolymers of vinyl monomers (e.g., acrylates), optionally monoethylenically unsaturated carboxylic acids (e.g., acrylic acid) and terpenes (e.g., citrus terpene). The copolymers, which are obtainable by radical emulsion polymerization, are dispersible in water and are suitable as binders for interior paints.

The copolymers as per claim 1, unlike the copolymers of EP-A-0 219 043, are water soluble.

4. The copolymers as per claims 1-12, the method for producing them (claims 13-16) and their use (claims 17-23) are therefore novel in relation to the documents cited in the international search report (PCT Article 33(2)).

Inventive step:

The problem addressed by the invention was that of providing new water-soluble compositions for preventing the formation of inorganic and organic deposits in water supply systems, said components showing no toxicity, being stable in storage and exhibiting uniform effectiveness independently of temperature fluctuations.

None of the international search report citations suggests the water-soluble copolymers as a solution to the problem of interest:

The copolymers of EP-A-1 209 198 contain toxic solvents, disposal of which is extremely costly.

SU-A-1 435 580 deals with copolymers, principally with the method of producing them and increasing the yield.

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Consequently, the known copolymers solve a different problem from the copolymers as per claim 1.

EP-A-0 219 043 concerns only water-dispersible to water-resistant copolymers, which point away from the water-soluble copolymers as per claim 1 and from the problem addressed by the invention.

Consequently, an inventive step can be acknowledged for claims 1-23 (PCT Article 33(3)).

Industrial applicability:

The copolymers, the method of producing them and their use (claims 1-23) are industrially applicable (PCT Article 33(4)).

**THE FOLLOWING ARE THE ENGLISH TRANSLATION
OF ANNEXES TO THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT (ARTICLE 34):**

Amended Sheets (Page 24)

Claims

1. Water-soluble copolymers of
 - a) monoethylenically unsaturated, acid-group-containing monomers and
 - b) at least one of the following copolymerizable hydrophobic components that contains an unsaturated double bond
 - b1) an acyclic, monocyclic and/or bicyclic terpene
 - b2) an unsaturated, open-chain or cyclic, normal or isomeric hydrocarbon with 8 to 30 carbon atoms
 - b3) an unsaturated fatty alcohol or an unsaturated fatty acid with respectively 8 to 30 carbon atoms and its esters or amides with saturated aliphatic alcohols, amines and acids,characterized in that the copolymers are formed by radical copolymerization of components a) and b) in the aqueous phase.
2. Copolymers according to claim 1, characterized in that the monoethylenically unsaturated, acid-group-containing monomers are composed of monoethylenically unsaturated monocarboxylic acids.
3. Copolymers according to claim 1 and 2, characterized in that the acid-group-containing monomers are chosen from the group comprising acrylic acid, methacrylic acid and/or vinylacetic acid.
4. Copolymers according to claim 1 to 3, characterized in that the monoethylenically unsaturated, acid-group-containing monomers are composed of monoethylenically unsaturated monocarboxylic acids and monoethylenically unsaturated sulfonic acids.
5. Copolymers according to claim 1 to 4, characterized in that the acid groups in the monomers are neutralized in a proportion of 1 to 75%.
6. Copolymers according to claim 1 to 5, characterized in that the acid groups in the monomers are neutralized in a proportion of 5 to 30%.

REPLACED BY
ART 34 AMDT

INTERNATIONAL SEARCH REPORT

In Application No
PCT/EP 03/06291

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C08F220/06 C02F1/56 C14C9/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C08F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CHEMICAL ABSTRACTS, vol. 110, no. 8, 17 April 1989 (1989-04-17) Columbus, Ohio, US; abstract no. 135940, "PRODUCING A COPOLYMER OF METHACRYLIC ACID WITH TERPENES" XP000180101 abstract & SU 1 435 580 A (BELORUSSIAN POLYTECHNIC INSTITUTE) 7 November 1988 (1988-11-07)	1-10, 13
A	EP 0 219 043 A (BASF) 22 April 1987 (1987-04-22) cited in the application	
A	EP 1 209 198 A (SUMITOMO SEIKA CHEM. CO.) 29 May 2002 (2002-05-29)	

☐ Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

G document member of the same patent family

Date of the actual completion of the international search

4 September 2003

Date of mailing of the international search report

15/09/2003

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INTERNATIONAL SEARCH REPORT

Ir on on patent family members

Application No
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Patent document cited in search report		Publication date		Patent family member(s)	Publication date
SU 1435580	A	07-11-1988	SU	1435580 A1	07-11-1988
EP 219043	A	22-04-1987	DE	3536931 A1	23-04-1987
			EP	0219043 A2	22-04-1987
EP 1209198	A	29-05-2002	JP	2000355614 A	26-12-2000
			EP	1209198 A1	29-05-2002
			CN	1370202 T	18-09-2002
			WO	0077093 A1	21-12-2000